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PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re the Patent of:

MCGRATH

Patent No.: 6,927,943 B1

Issued: August 9, 2005

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Atty. File No.: 3123-405 (16420-02074)

For: "ATTACHMENT METHOD AND
APPARATUS FOR LOAD/UNLOAD
RAMP OF A DYNAMIC LOAD DISK
DRIVE"

REQUEST FOR CERTIFICATE OF
CORRECTION OF PATENT FOR
PTO MISTAKE
(37 C.F.R. 1.322(a))

<p>CERTIFICATE OF MAILING</p> <p>I HEREBY CERTIFY THAT THIS CORRESPONDENCE IS BEING DEPOSITED WITH THE UNITED STATES POSTAL SERVICE AS FIRST CLASS MAIL IN AN ENVELOPE ADDRESSED TO COMMISSIONER FOR PATENTS, P.O. BOX 1450, ALEXANDRIA, VA 22313-1450 ON 8/25/05</p> <p>MARSH FISCHMANN & BREYFOGLE LLP</p> <p>BY: <u>Ruth E. Stigler</u></p>
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Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Certificate
SEP 01 2005
of Correction

Dear Sir:

This is a request for a Certificate of Correction for PTO mistake under 37 C.F.R. 1.322(a). The errors in the patent are obvious typographical errors or omissions and the correct wording can be found in the original specification at Page 2, line 7, Page 13, line 5, and Page 23, lines 13-14, or the Amendment and Response dated September 28, 2004, at Page 5, line 18, Page 6, lines 19, 20 and 21, Page 7, line 12, Page 8, line 1, and Page 19, line 2. Attached is form PTO 1050 in duplicate along with copies of documentation that unequivocally supports patentee's assertion(s).

Respectfully submitted,

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By: James L. Johnson

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Date: 8/25/05

SEP 2 2005

A suspension or load beam may be provided for each data storage surface of each data storage disk. Typically each disk has two of such surfaces. All suspensions are appropriately attached to and extend away from the actuator arm assembly in the general direction of the data storage disk(s) during normal operations. A transducer, such as a read/write head, is carried by a slider that is disposed on the free end of each suspension. Signals are exchanged between the head and the corresponding data storage disk to read and/or write information. The position of the actuator arm assembly, and thereby each transducer, is controlled by a voice coil motor or the like which moves the actuator arm assembly to dispose the head(s) at the desired radial position relative to the corresponding data storage disk.

The head(s) of the disk drive is parked off its corresponding data storage disk by using a load/unload ramp. The load/unload ramp is typically disposed at least toward (and possibly beyond) the perimeter of the corresponding data storage disk. Load/unload ramps may be made from plastic to reduce material costs, and are nonetheless attached to the base plate. It is desirable to have the load/unload ramp demonstrate good wear characteristics as the suspension/slider moves along the ramp. Moreover, it is desirable for the load/unload ramp to tolerate the increased temperatures that exist within the disk drive housing during disk drive operations. Certain plastics may have a tendency to creep at these temperatures, particularly over those areas of the load/unload ramp that are stressed by the attachment of the load/unload ramp to the base plate. "Creeping" refers to a progressive deformation over a period of time due to a material being under a constant load or stress. This time dependent deformation has proven to be a limiting factor in the operational integrity of at least certain designs of load/unload ramps that are formed from plastic.

fastener may have a lower surface which is seated on the upper surface of a corresponding boss of the base plate, while at the same time having engaged the corresponding base plate attachment cantilever(s) so as to deflect the load/unload ramp assembly into forcible engagement with the underlying base plate. In other words, once installed, the lower surface of a given fastener head is in direct communication/engagement with the upper surface of the corresponding boss of the base plate. This allows a given fastener to exert a significant load on the base plate (by engaging a corresponding boss), while at the same time exerting a smaller (and more preferably a significantly smaller) load on each of the base plate attachment cantilevers that is engaged by the head of this fastener.

Any fastener associated with the second aspect and continuing with the foregoing (preferably via the lower surface of the head) may exert an axial force within a range of about 25 pounds up to about 400 pounds, and more preferably about 100 pounds up to about 200 pounds, on the upper surface of the corresponding boss of the base plate. In addition to affecting a force on at least the upper surface of the corresponding boss, the lower surface of the fastener head generally deflects each of the base plate attachment cantilever(s) engaged thereby so as to dispose the load/unload ramp assembly into forcible engagement with underlying portions of the first surface of the base plate as noted above. This deflection of each of the base plate attachment cantilevers again is generally in response to the shaft of the corresponding fastener being moved further within the fastener receptacle and a resulting engagement of the head of the fastener against deflectable portions of the base plate cantilevers that are associated with the particular fastener. In one embodiment, in an installed position, each base plate attachment cantilever generally deflects from about 4 mils to about 8 mils due to the force exerted by the head of the fastener. However, embodiments

connecting the first and second base plate attachment cantilevers 46, 48 is generally perpendicular to a second reference line 72 connecting the first and second aperture shelves 47, 49. An intersection point 74 of these two reference lines 70, 72 generally corresponds with a central portion of the fastener aperture 50 of the load/unload ramp assembly 40. It should be appreciated that the load/unload ramp assembly 40 may be in currently formed or of one-piece construction. In one embodiment, the load/unload ramp assembly 40 may be formed by injection molding techniques utilizing a suitable plastic, such as acetal or liquid crystal polymer (LCP). However, other manufacturing techniques and/or materials could be utilized in relation to the load/unload ramp assembly 40.

Referring to Figures 5-6, the first surface 13 of the base plate 11 of the disk drive 10 includes a boss 82 which projects away from the first surface 13 and which includes a fastener receptacle 84 for the fastener 52. Generally, this boss 82 is preferably integral with the base plate 11. In other words, the base plate 11 and the boss 82 are preferably a one-piece unit, as is the entirety of the base plate 11 (e.g., formed by casting and/or machining such that there are no joints in the base plate 11). The fastener receptacle 84 of the boss 82 generally has threaded walls 94 designed to cooperatively engage the threaded shaft 54 of the fastener 52 upon insertion of the fastener 52 into the fastener receptacle 84 (see Figure 7). The base plate 11 also includes first and second mounting pads 86, 88 disposed in opposing relation on the first surface 13 of the base plate 11, with the boss 82 being positioned between the first and second mounting pads 86, 88. Thus, a reference line 73 connecting the first and second mounting pads 86, 88 generally extends through the boss 82 of the base plate 11. The first and second mounting pads 86, 88 are recessed relative to the upper surface of the boss 82 of the base plate 11. In other words, the upper surface of the boss 82 of the base

11. (Original) A load/unload ramp assembly, as claimed in Claim 1, wherein said ramp body further comprises at least one base plate alignment post.

12. (Original) A load/unload ramp assembly, as claimed in Claim 1, wherein said ramp body is fabricated from plastic.

5 13. (Currently Amended) A disk drive comprising:
a base plate comprising a first surface and a boss projecting away from said first surface, wherein said boss comprises a fastener receptacle;

a load/unload ramp assembly disposed on said base plate, wherein said load/unload ramp assembly comprises:

a ramp body that comprises:

a load/unload ramp; and

10 a first base plate attachment cantilever that comprises a first free end
and a first fixed end; and

a fastener comprising a head and a shaft, wherein said first free end of said first base plate attachment cantilever is separated from an underlying portion of said base plate by a first open space when said load/unload ramp is initially positioned on said base plate and prior to engagement
15 of said fastener with said base plate, wherein said shaft of said fastener extends past said first base plate attachment cantilever of said load/unload ramp assembly and is ~~securely~~ disposed within said fastener receptacle of said base plate, wherein decreasing a spacing between said head of said fastener and said base plate causes ~~such that~~ said head of said fastener to exerts a force on said first base plate attachment cantilever to deflect said first free end of said first base plate attachment
20 cantilever through said first open space, toward said base plate, and at least generally about said first fixed end of said first base plate attachment cantilever so as to reduce a magnitude of said first open

space and in turn force a bottom surface of said load/unload ramp assembly into engagement with said first surface of said base plate.

14. (Original) A disk drive, as claimed in Claim 13, wherein said base plate further comprises first and second mounting pads disposed on said first surface of said base plate.

5 15. (Original) A disk drive, as claimed in Claim 14, wherein said first and second mounting pads are recessed relative to said boss of said base plate.

16. (Original) A disk drive, as claimed in Claim 14, wherein said first and second mounting pads are disposed in opposing relation.

17. (Original) A disk drive, as claimed in Claim 16, wherein said boss of said base
10 plate is disposed between said first and second mounting pads.

18. (Currently Amended) A disk drive, as claimed in Claim 14, further comprising a second base plate attachment cantilever that comprises a second free end and a second fixed end, wherein said second free end is separated from an underlying portion of said base plate by a second open space when said load/unload ramp is initially positioned on said base plate and prior to
15 engagement of said fastener with said base plate, wherein said first and second free ends are disposed in spaced relation to define at least part of a fastener aperture, wherein said shaft of said fastener passes through said fastener aperture of said load/unload ramp assembly and said head of said fastener exerts a force on said first and second base plate attachment cantilevers to deflect first and second free ends of said first and second base plate attachment cantilevers, respectively, through said
20 first and second open spaces, respectively, toward said base plate, and at least generally about said first and second fixed ends, respectively, so as to reduce a magnitude of said first and second open spaces and in turn force said bottom surface of said load/unload ramp assembly into engagement with said first surface of said base plate.

19. (Original) A disk drive, as claimed in Claim 18, wherein said first and second mounting pads are disposed about said boss of said base plate such that an imaginary line connecting said first and second mounting pads is perpendicular to an imaginary line connecting said first and second base plate attachment cantilevers of said load/unload ramp assembly.

5 20. (Original) A disk drive, as claimed in Claim 18, wherein said ramp body further comprises at least one aperture shelf that is disposed about said fastener aperture, wherein said at least one aperture shelf is recessed relative to an upper surface of each of said first and second base plate attachment cantilevers, and wherein said at least one aperture shelf overlays at least one of said first and second mounting pads.

10 21. (Currently Amended) A disk drive, as claimed in Claim 13, wherein said ramp body further comprises at least one aperture shelf that is disposed about said fastener aperture ~~receptacle~~, wherein said at least one aperture shelf is recessed relative to an upper surface of said first base plate attachment cantilever.

22. (Currently Amended) A disk drive, as claimed in Claim 21, further comprising
15 a second base plate attachment cantilever that comprises a second free end and a second fixed end,
wherein said second free end is separated from an underlying portion of said base plate by a second
open space when said load/unload ramp is initially positioned on said base plate and prior to
engagement of said fastener with said base plate, wherein said first and second free ends are disposed
in spaced relation to define at least part of a fastener aperture, wherein said shaft of said fastener
20 passes through said fastener aperture of said load/unload ramp assembly such that ~~and~~ said head of
said fastener exerts a force on said first and second base plate attachment cantilevers to deflect said
first and second free ends of said first and second base plate attachment cantilevers, respectively,
through said first and second open spaces, respectively, toward said base plate, and at least generally

about said first and second fixed ends, respectively, to reduce a magnitude of said first and second open spaces and in turn force said bottom surface of said load/unload ramp assembly into engagement with said first surface of said base plate, wherein said first and second base plate attachment cantilevers are disposed in opposing relation, and wherein said at least one aperture shelf
5 comprises first and second aperture shelves that are disposed in opposing relation.

23. (Original) A disk drive, as claimed in Claim 22, wherein said first and second base plate attachment cantilevers are disposed about said fastener aperture such that an imaginary line connecting said first and second base plate attachment cantilevers is perpendicular to an imaginary line connecting said first and second aperture shelves.

10 24. (Original) A disk drive, as claimed in Claim 13, wherein said first base plate attachment cantilever comprises at least one fastener head contact protrusion disposed on an upper surface of said first base plate attachment cantilever.

25. (Original) A disk drive, as claimed in Claim 24, wherein each said fastener head contact protrusion on said first base plate attachment cantilever is disposed at least generally at
15 said first free end.

26. (Original) A disk drive, as claimed in Claim 24, wherein said first base plate attachment cantilever comprises a pair of said fastener head contact protrusions.

27. (Original) A disk drive, as claimed in Claim 13, wherein an upper surface of said first base plate attachment cantilever is substantially parallel with said first surface of said base
20 plate.

28. (Original) A disk drive, as claimed in Claim 13, wherein said first base plate attachment cantilever comprises a lower surface, wherein said lower surface of said first base plate attachment cantilever extends at least generally upwardly progressing toward said first free end of

a ramp body that comprises:

a load/unload ramp; and

a first base plate attachment cantilever that comprises a first free end;

and

a fastener comprising a head and a shaft, wherein said shaft of said fastener extends past said first base plate attachment cantilever of said load/unload ramp assembly and is securely disposed within said fastener receptacle of said base plate such that said head of said fastener exerts a force on said first base plate attachment cantilever to deflect said first base plate attachment cantilever toward said base plate to in turn force a bottom surface of said load/unload ramp assembly into engagement with said first surface of said base plate.

72. (New) A disk drive comprising:

a base plate comprising a first surface and a boss projecting away from said first surface, wherein said boss comprises a fastener receptacle;

a load/unload ramp assembly disposed on said base plate, wherein said load/unload ramp assembly comprises:

a ramp body that comprises:

a load/unload ramp; and

a first base plate attachment cantilever that comprises a first free end;

and

a fastener comprising a head and a shaft, wherein said shaft of said fastener extends past said first base plate attachment cantilever of said load/unload ramp assembly and is securely disposed within said fastener receptacle of said base plate such that said head of said fastener exerts a force on said first base plate attachment cantilever to deflect said first base plate attachment

UNITED STATES PATENT AND TRADEMARK OFFICE

CERTIFICATE OF CORRECTION

PATENT NO. : 6,927,943 B1
DATED : August 9, 2005
INVENTOR(S): MCGRATH

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Column 1

Lines 45-46, delete "inform-nation" and insert therefor --information--.

Column 7

Line 24, delete "commmunication", and insert therefor --communication--.

Column 12

Lines 47-48, delete "one ti piece", and insert therefor --one-piece--.

Column 17

Line 48, delete "exerts", and insert therefor --exert--.

Column 18

Line 15, after "respectively", insert --,--;
Line 16, after "respectively", insert --,--;
Line 17, after "respectively", insert --,--;
Line 37, delete "recepticle", and insert --receptacle,--;
Line 56, after "ends", insert --,--;
Line 57, after "respectively", insert --,--.

Column 24

Line 30, delete "loadlunload", and insert therefor --load/unload--.

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